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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,171	06/15/2001	Hwee Hwa Pang	P21105	6020

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EXAMINER

LAO, SUE X

ART UNIT	PAPER NUMBER
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2126

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,171

Applicant(s)

PANG ET AL.

Examiner

Sue Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 9/20/2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11, 13-17, 21 is/are rejected.
- 7) ☒ Claim(s) 8-10, 12, 18-20 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-22 are pending. This action is in response to the amendment filed 9/20/2004. Applicant has amended claims 1-3, 8, 10-14, 18 and 20-22.

2. A copy of the Aptiva Handbook (IBM) reference cited in PTO-1449 filed 10/9/2001 was not located on file. Thus it was not available for consideration by the examiner.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over La Porta et al (U S Pat. 6,085,086) in view of Jagannathan et al (U S Pat. 6,496,871).

As to claim 1, La Porta teaches a method for removing (core dump and transfer) a part (core portion) of a computing process (user process) comprising items of data, program code and executing states (data, text, stack, col. 8, lines 23-38), wherein the process includes a first process (executable portion) and a second sub-process (core portion), the second sub-process comprising program code and/or execution states of the computing process (user area, stack and data storage) not required by the first process [it is noted that the core portion is not required by the user process while migrating.]. See col. 8, lines 23-63.

While La Porta teaches that the process (user process) includes the first process (executable portion) and the second sub-process (core portion) which are formed during migration (core is dumped, transferred and rejoined, col. 8, lines 47-56; fig. 7A, 8), La Porta does not explicitly teach using a splitting step to form the first process and the second sub-process. However, La Porta teaches using a splitting step to form a sub-process to hold data related to the user process (fork off a child stub process to hold messages sent to the user process, col. 8, lines 44-46). Therefore, it would have been

obvious to also use a splitting step to form the first process and the second sub-process in La Porta.

La Porta does not teach that the program code and/or execution states of the second sub-process are *a portion of* program code and/or *a portion of* execution states.

Jagannathan teaches process/agent migration (partial migration), including splitting a process (process executed by an agent) into first process (subagent A2) and a second sub-process (subagent A1), wherein the second sub-process (subagent) comprises a portion of program code and/or a portion of execution states (subagent contains portions, including selected tasks / subset of objects, of an agent). See col. 9, lines 32-40; col. 12, lines 46-63; col. 18, lines 24-51.

Therefore, it would have been obvious to include a portion of program code and/or a portion of execution states into the second sub-process of La Porta for migration.

One of ordinary skill in the art would have been motivated to combine the teachings of La Porta and Jagannathan. La Porta teaches migrate the second sub-process in whole (col. 8, lines 44-46). Jagannathan recognizes the limitations of such a migration scheme (col. 1, lines 19-50; col. 4, line 47 – col. 5, line 35) and provides for both total/whole migration (fig. 13) and partial/in_part migration (fig. 12) of a process, which provides higher performance (col. 23, lines 25-57). Therefore, one of ordinary skill in the art would have been motivated to include partial migration (subagent migration) into La Porta to compliment the whole migration.

As to claim 2, La Porta teaches the sub process comprises items of data (data storage). It is noted that a core dump typically includes program code (code executed up to the point of dump), a well known example of which can be found in UNIX.

5. Claims 3-22 are rejected under 35 U.S.C. 103 (a) as being unpatentable over La Porta et al in view of Jagannathan et al as applied to claim 1 further in view of Apple Computers (Technical Introduction to the Macintosh Family).

As to claim 3, La Porta teaches the first process retains the process identity of the computing process in that they are both addressed as user process.

La Porta does not teach forming a construct to store the second sub-process.

Apple teaches (pages 135-145) splitting a process (application) into a first process (data fork) and a second sub-process (resource fork holding resources), wherein a construct (resource fork including resource map and resource data) is formed to store the sub-process. See pages 135-136.

Therefore, it would have been obvious to form a construct to store the sub-process in La Porta. One of ordinary skill in the art would have been motivated to combine the teachings of La Porta and Apple because this would have provided more efficient management of the data/resource contained in the second sub-process using the resource tools of Apple (pages 143-145).

As to claim 4, La Porta teaches creating a new sub-process comprising at least some of the data and/or program modules and/or execution state of the computing process (La Porta, user area, stack and data storage), and stores the sub-process in a data area of the computing process (core, see discussion of claim 1). As to suspending all active threads, this is a typical step [also called freeze] taken before core dump.

As to claim 5, La Porta as modified teaches (Apple) the construct comprises only data, program modules and execution state falling within lists (resource index) that are passed to the construct operation (pages 135-136).

As to claim 6, La Porta as modified teaches (Apple) authorising signature (protected resources, page 138). Note discussion of claim 3 for a motivation to combine.

As to claim 7, La Porta teaches the construct is sent to a memory storage device (checkpointed, col. 8, lines 23-37).

As to claim 11, La Porta teaches after the first process finishes executing data, program code and execution states from the first process are added to the second sub-process (dump core, col. 8, lines 47-49) and the second sub-process is reactivated (rejoin with the executable, col. 8, lines 53-56).

As to claim 13, La Porta teaches a construct (core portion) is formed for storing the second sub-process [see discussion of claim 2], while the first process is run in place of the computing process (parent user process exist and new user process is created to continue computation, col. 8, lines 48-56).

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As to claim 14, it is covered by claim 4 except for data area of the first process which is met by La Porta (core portion of user process).

As to claims 15-17, 21, these claims are presented in claims 5-22, respectively. Thus note claims 5-12, respectively, for discussions.

6. Claims 8-10, 12, 18-20, 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Applicant's arguments filed 9/20/2004 have been considered but are moot in view of the new ground(s) of rejection. Applicant amended claims have added limitations not previously recited, thus, requiring a new grounds of rejection.

As to the amended and argued feature that the second sub-process comprises a portion of the program code and/or a portion of the execution states, it is met by Jagannathan who recognizes the limitations of a whole/total migration scheme (col. 1, lines 19-50; col. 4, line 47 – col. 5, line 35) and provides for both total/whole migration (fig. 13) and partial/in_part migration (fig. 12) of a process, which provides higher performance (col. 23, lines 25-57), as detailed in the discussion of claim 1.

As to the argued advantages of “reduces the footprint of processes”, “when other processes are started on the same host machine”, “process made to fit within available memory, thus avoiding page swaps” and “swapping at a logical level rather than physical pages” (remarks, pages 12-13), these are not recited in the claims. Thus the argument is not persuasive.

As to the argument that La Porta does not teach forking (remarks, page 15), forking is not required by any of the pending claims, which nevertheless is taught by La Porta (step 120) to create a the second sub-process.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (571) 272-3764. A voice mail service is also available at this number. The examiner's supervisor, SPE Meng-Ai An, can be reached on (571) 272 3756. The examiner can normally be reached on Monday - Friday, from 9AM to 5PM. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 14, 2005



SUE LAO
PRIMARY EXAMINER